ANALYSIS OF FEATURES OF WINDOWS 2000 OPERATING SYSTEM

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DEDICATION

This project is dedicated to Almighty Allah, my husband Alhaji Nma Mohammed Abubakar and my children Muhammed Nuraini Nma and Aisha Nma Mohammed.

CERTIFICATION

We hereby satisfy that this work was carried out by Mohammed Munirat Nma in the Department of Mathematics/Computer science of school of science and science education of the Federal University of Technology, Minna.

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ABSTRACT

This project is centered on the features analysis of windows 2000 operating system. Windows 2000 eliminate many of the concern with windows 98 and Windows NT 4.0. The study of windows 2000 was carried out to show how its features could be seen to reduce the cost of desktop management and delivers the best business capability available. It is hope that this write up will give an insight into windows 2000 operating system to those with little knowledge of the subject.

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CHAPTER ONE

ANALYSIS OF FEATURES OF WINDOWS 2000 OPERATING SYSTEM

1.1 GENERAL INTRODUCTION.

In the past, microcomputer could be seen as a machine that is capable of doing one task at a time. If the user is interested in changing tasks, this generally involved closing down the first application removing the disk, loading a second disk and then moving on to next job a process that could take several minutes. Nowadays, micro computer is capable of wide verity of tasks including word- processing and communication. Still upon this development, it has been quite difficult for a user to swap information from one another. Even where it is possible to swap information such as from spread sheet package to word star, the process is often quite difficult and time consuming.

The problem with this limitation on micro computers and their software is that they impose artificial restriction on the way people work with computers.

Users generally do work on one job all the way through but instead tends to skip from task to another. Equally, it is a waste of time entering the same information two or three times simply because it has to be manipulated in different ways. Thus experiences has led the software industry to invest considerable time and effort into finding ways to integrate general application software, so that user can skip easily from one job to another and transfer data between applications.

Microsoft incorporation (micro computer industry) came up with not one solution but a myriad of options.

The introduction of windows a modified application environment, which combine powerful hardware with a complete set of specially integrat packages to take full advantages of the system and so, made available a wide variety of machines. Windows represent an applica

environment that makes computer easier to learn and allowed several application to run at the same time. It is possible for instance to sort a database, print a document and work on a spread sheet simultaneously. Windows also provides simple means of information exchange between applications.

In addition, windows provide an object links to help application share date, true type fonts that can be size to any height and print exactly as they appears on the screen.

Finally, windows operating environment like a virtual machine interface eliminate hardware dependencies and graphics overhead, application program have more flexibility to accomplish their own tasks, for user a universal application interface means the conveniences of data exchange, simultaneous view of programs and familiar look to many different applications.

1.1.1 Windows 3.1 operating system, which was released by Microsoft incorporation around early 90's.

1.1.2 Windows 95 operating system later came into existence. With windows 95 operating system all the things you do now will be easier and faster.

1.1.3 Windows 98 operating system was also released. It could be found in most homes nowadays. It has better and improved features than windows

1.1.4 Windows NT 4.0 workstation and windows NT server was released five years ago.

Early last year around February Microsoft windows 2000 arrived which is the latest windows versions in market.

1.2 OBJECTIVES OF THE PROJECT

- To broadly appraise and analysis the features of windows 2000 operating system ranging from security, scalability and reliability.
- To analyses and evaluate the monitoring and performance of windows 2000 operating system.
- To analyses the best features of windows 98 and Windows NT operating system.
- To study architecture of windows 2000 operating system so as to know the kind of program that could be run on the operating system.
- To give a comparative conclusion among the operating systems and choose the best for business purpose

1.3 SCOPE OF THE STUDY

This project work starts with the general introduction of windows its concepts and what is was developed to perform. Proposal of the project or motivation for the project work, objectives of the study of the features that characterized windows as operating system.

Chapter two talks on the literature review of 2000 operating system, chapter three as all about the analysis of windows operating system chapter four, talks about performance of windows 2000 operating system, monitoring the performance and security. Chapter five is limitation conclusion and recommendations.

1.4 PROJECT PROPOSAL

Most of the windows operating system released by Microsoft have both merits and demerits actually windows 3.1 operating system was released which was the first windows operating system, it has several limitations and Microsoft industry had to sit down and improved upon the features of this operating system. Later, another operating system, which was called windows 95, was released, with windows 95 operating system, all the

things you do now will be easier and faster and what you have always wanted to do is now possible. Sometimes after windows 95 operating system have capture the market, people later disconcerted that this windows 95 operating system could not meet their demand any longer in certain area and they started criticizing this operating system and thereby making Microsoft industry to improve upon the features of windows 95 operating system and later released windows98 operating system which could be found in most homes nowadays. It has better and improved features than windows 95.

It got to a stage that Microsoft industry felt that there should be need for an adequate system security taking into consideration business computing, they came up with an operating system windows NT workstation4.0 the most powerful operating system for business computing.

This operating system combines the ease of use of windows 95 with the power and liability of windows NT there after windows NT server was released.

Early 2000 to be precise February 17, Microsoft Inc released the Microsoft latest windows version, which combines the best features of windows 98 with the power and stability of windows NT referred to as windows 2000. windows 2000 operating system, it was released to compete with the high end server market, which is largely dominated by Unix and mainframe system.

The reason why I decided to work on this project topic, is based on the facts that, I actually want to analyses the features of this windows 2000 operating system with that of windows 98 and windows NT operating system, so as to be able to deduce if windows 2000 operating system really worth it or is very good for rapidly growing small business that need a scalable system that can easily grow with them.

1.5 METHODOLOGY

Due to the wide nature of this project, different books on software life cycle and widely computer operating system manuals were reviewed to get the basic concept and fundamentals of windows operating environment. Micro bytes magazines and some other books on windows 2000 operating system were consulted to get the features of this operating system.

Also a resource kit copies gives technical information and insight tot the writing of this project, other books include the MCSE windows NT workstation study guide were also consulted.

CHAPTER TWO: ANALYSIS OF WINDOWS 2000

2.1 TYPES OF WINDOWS 2000 OPERATING SYSTEM

There are four types or version of windows 2000 operating system and they are as follows:

1. Windows 2000 professional that replace windows NT workstation 4.0 and has any up grade platform windows 95 and 98 operating system.
2. Windows 2000 server, it replaces Windows NT server.
3. Windows 2000 advanced server replace windows NT server edition
4. Windows 2000 data center server; Microsoft most powerful and functional server operating system is optimized for large data warehouse, econometric analysis large scales simulation in science and engineering and server consolidation projects.

Because of the various versions of windows 2000 operating system and how cumbersome it will be to analysis all their features much emphasis will be made on windows 2000 professional and server

2.2 WHAT IS WINDOWS 2000 PROFESSIONAL?

Microsoft windows 2000 professional incorporated the best features of windows 98 and builds on the traditional strength of Microsoft windows NT for a desk top operating system that reduce the cost of desktop management and delivers the best business capability available.

Windows 2000 professional eliminates many of the concerns with windows 98 and windows NT 4.0 conclusively windows 2000 professional is the most reliable desktop and mobile operating system (OS) for organization of all users. It is the replacement operating system (OS) for Windows 95, 98 and Windows NT workstation 4.0

FEATURES OF WINDOWS 2000 PROFESSIONAL

Windows 2000 is noted for its enhanced reliability security and scalability. Some of its most significant features are as follows:-

1. INTELLIGENT INTERFACE

It accomplished this primarily through the personalized menu feature. This feature monitors the usage of applications and files then automatically places the most frequently used application and files on the start menu. When the operating system detects that you are using a particular application or file less frequently, the personalized menu features hides it within its original folder on the start menu. Windows 2000 features other interface improvements as well. The search function will be expanded to support searches of the computer, the network, and the web. The help function support favourite tabs, so you can book mark the help files that you access the most often.

Windows 2000 support more than 60 language characters sets and Microsoft has redesigned the operating system dialog boxes and error message to be more intuitive.

Finally, Microsoft has streamlined the interface to reduce duster. For example the printers, network connections, schedules led tasks and administrative tools folders that once existed within my computer are now listed only in the control panel.

2. ENHANCED MOBILE SUPPORT

One of the major failures of Windows NT as a corporate operating system was its lack of mobile support. Windows 2000 professional has three keys technologies that make it easier for users to take their notebook computers on the road. The network connection wizard one of windows 2000's new networking features, guides you through the process of connecting your PC to an existing network or another Pc. The first mobile friendly technology built into windows 2000 is support for the advanced configuration and power interface (ACPI), which provide rebust power management functionality to a notebook computer (ACPI) automatically puts portable Pc in standby made if it detects that you have not used the computer for a set period of time as a result you can enjoy the maximum

life span of your portable batteries.

The second and third technologies, the offline files features and the synchronization manager, work in tandem to help you keep up to date with the network. The offline files features allow you to duplicate files on your portable Pc so you can access them even when you are operating offline. The synchronization manager helps you synchronize files between the notebook and your Pc.

3. **SUPPORT FOR NEXT GENERATION HARDWARE**

Windows 2000 supports the up and coming hardware technologies that promise to improve the way we devise computer systems and networks. The most significant of these new technologies are the Institute of Electrical and Electronics Engineering (IEEE) 1394 and the universal serial bus (SUB) USB is important for a few reasons. First it allow for the high-speed transmission of data between a computer and the high-speed transmission of data between a computer and a peripheral. Second, a single USB font can support as many as127 peripheral devices allowing for virtually unlimited expandability. Third you can install a USB device on your computer case or even restarting the Pc.

IEEE 1394 is similar to USB. It allows hot swapping support, support as many as 63 peripheral devices on a single port and carries even faster data transmission between a computer and a peripheral.

Other emerging hardware technologies supported by windows 2000 include accelerated graphics ports (AGPS) which support graphics data transfer rates of as much a 266 megabytes per second (MBPS) and the Asynchronous Transfer Mode (ATM) which supports data transfer rates of as much the simultaneous transmission of video, audio and data over a single network. Additionally, windows 2000 supports all the major server platforms, including windows NT Novell NetWare, and Unix.

4. **WEB INTERGRATION**

Microsoft computer operating system has a built in web browser, this is a new concept for Microsoft corporate desktop operating system. One important component of Microsoft internet explorer that is sure to have an effect on use activity is the intelligence technology.

Intelligence monitors your online habits and automates the web related tasks you habitually perform for example when you are typing in the Universal Resources locator (URL, a web address)of a site you have visited recently, intelligence will recognize the address and complete it for you after you have entered only the first three or four letters. The built in browser also complements other new technologies in windows 2000.

The expanded search function, for instance, is able to provide web-searching capabilities because of the built in browser.

5. **NETWORK CONNECTIVITY**

Microsoft incorporates several new networking related technologies as part of the windows 2000 operating system. The most obvious of these is the networking places desktop interface that combines all network setting and connectivity programs into a single location. A set of hardware configuration and connection wizards complement my network places. Other networking related technologies supported by windows 2000 provide support for 128 bit data encryption.

6. **INTELLIMIRROR TECHNOLOGY**

From an administrative perspective, one of the most significant new technologies to appear in windows 2000 in the highly touted intellimirror management technology. Actually, as a set of network management technologies intellimirrior is based on as three principles user data management, software installation and maintenance and as user setting management. These principles work together to reduce network management costs by allowing each user's data and configuration settings to follow him or her throughout a network administrator to set initial

policies according to these three principles, minimal administrative involvement will be necessary later.

2.3 WINDOWS 2000PROFESSIONAL HARDWARE SYSTEM REQUIREMENTS.

1. MEMORY (RAM) 64 MB OF RAM MINIMUM
2. PROCESSOR 300 MHZ PENTIUM II PROCESSOR
3. AVAILABLE HARD DISK SPACE MINIMUM OF 2GB OF HARD DRIVE SPACE.

2.4 WHAT IS WINDOWS 2000 SERVER

Windows 2000 server can be regarded the multipurpose network operating system for business of all sizes. It is the easy way to internet enable your business.

As business come to rely more on the internet they have the opportunity to grow, extend their products and services to market. To take the advantage of these opportunities, business need an infrastructure that can readily respond to market forces, delivers high reliability efficient management ease of use, and supports the latest advance in networking hardware. And to readily pursue these opportunities, business want to built on their existing investments in skills and systems.

Windows 2000 server is designed to meet these needs for business of all sizes, from small centralized organization of the largest distributed enterprises. Building on the strengths of windows NT server 4.0.

Windows 2000 server sets a new standard for how well an operating system can be integrated with standard based directory, web application network, file and print service, powerful end to end management and reliability to provide the best foundation for integrating your business with the internet.

FEATURES OF WINDOWS 2000 SERVER

Windows 2000 server provide a wide array of powerful new features and functionality.

Highlight includes:

1. **INTERNET ENABLING FEATURES:**
   a. Run rich web applications and host web sites easily with enhanced internet information service 5.0
   b. Create and powerful web solutions with XML integration.
   c. Built scalable applications quickly with the component object model (COM+).
   d. Securely connect mobile employees and branch officers on virtual private network (VPN).
   e. Simplify extranet user management with active directory
   f. Issue a manage digital certificates through public key infrastructure
   g. Secure data on hard disks or in transmission with encryption features.
2. **RELIABILITY FEATURES**
   a. Prevent over written system files with windows file protection
   b. Identify reliable and unreliable drivers with drivers certification
   c. Protect against errant web process with isolation for its.
   d. Dependably access data on the file shows with distributed file system.
   e. Ensure hard disk space availability with disk quota management
   f. Archive data automatically with hierarchical storage management.
   g. Change and configure hardware without rebooting with plug and play.
   h. Trouble shoot system during start up with safe mode book
3. **MANAGEMENT FEATURES**
   a. Configure your server automatically powerful wizards

b. Manage system data from any sources with windows management instrument (WMI)

c. Automatically records DNS computer names with dynamic DNS.

d. Simplify and centralize management strengthen security and extended interoperability with active directory.

e. Remotely manage servers from almost any desk top through terminal services

4. **NEW DEVICE SUPPORTED**

a. USB printers, keyboards and mice

b. Quality of service enable switched and routers

c. Directory enabled networking devices

d. IEE 1394 enabled devices

e. Infrared device

f. Aim and gigabit network enable devices

2.5 WINDOWS 2000 SERVER HARDWARE SYSTEM REQUIREMENTS

1. PROCESSOR: INTEL PERITIUM 133 MH2 OR HIGHER
2. MEMORY(RAM) 256 MB OF RAM RECOMMENDED MINIMUM (128MB MINIMUM SUPPORTAL 4 GBS MAXIMUM
3. AVAILABLE HARD DISK SPACE: 1.0GB HARD DISK SPACE.
4. MONITOR. VGA OR HIGHER RESOLUTION MONITOR

CHAPTER THREE: ANALYSIS OF FEATURES OF 3.1 WINDOWS OPERATING SYSTEM .

3.1.1 WEAKNESSES OFWINDOWS 3.1, 95 OPERATIUNG SYSTEM.

The weaknesses of windows 3.1 are as follows.

1. It is time consuming windows 3.1 user had a gruelling time getting their system to recognize a newly added hardware .
2. It involves high mathematical skill windows 3.1 users would have to contend with jumps on and off switches on circuit boards which called for high mathematical skill to resolve.

Many computers shipped before June 1995-Pcs that include some of the early Pentium chips will not have plug and play BIOS. To set up a jumper then you had to open your Pc case enter plug and play, Microsoft sharp slogan..

WAEAKNESSES OF WINDOWS 95 OPERATING SYSTEM

The sung is that plug-and – play isn't always a pieces of pie" it doesn't always work properly, several factor must come together for the process to work. To begin with, computers must have the necessary start up and peripheral software, which is know basic input, output system (Bios).

Again, not every computer, which you might wish to install, has the plug-and – play facility. Some lower rate scanners for instance don't have plug-and play. That is why Windows 95 came decked with add new hardware.

3.1.2 ANALYSIS OF FEATURES OFD WINDOWS 98 AND NT

The significant new features are as follows:

1. Interface: The interface has been completely integrated with internet explorer 4.x in an attempt to make desktop an extension of the web. Single click access to applications in peculiar to internet explorer 4.x.

2. Better Internet Support:- Windows 98 has a more reliable TCP/IP stack than windows 95. This allows developers to create a single hardware driver that will work on both windows 98 and windows NT 5.0, instead of writing different drivers for each operating system which made much more complicated to upgrade hardware.

3. System maintenance Tools:- The tune up wizard helps users defragment their disks and delete unnecessary files on a regular schedule The disk defragmenter optimization wizard creates a list of your most frequently accessed programs and organizes the hard disk to store them all next to each other. The accessibility setting wizard helps physically handicapped people adapt their desktop to their needs.

4. Hardware support and Drivers: Windows 98 includes built in support for high performance universal serial Bus (USB) peripherals; Accelerated Graphics ports (AGP) graphics cards MMX processors; and DVD drives. Windows 98 includes a much bigger collection of drivers for older hardware; the upgrade includes 1,200 new drivers in all. Laptop users will got enhanced power management based on the advanced configuration and power interface (ACP) standard as well as support for a variety of new PC card options, such as lower- power and multifunction cards. Windows 98 supports win 32 driver model. This allows developer to create single hardware 98 and windows NT 5.0, instead of writing different drivers for each operating system.

FEATURES OF WINDOWS NT

Windows NT is a secure, 32 bit computer operating system with a graphical interface. Windows NT 4.0 uses the windows 95 graphical interface. Windows NT workstation supports existing files structures, in

addition to the new file structure it introduces. Windows NT has many features that are especially noteworthy and are described as follows:

1. **PORTABILITY**: Windows NT can run on a variety of platforms. This flexibility can be a great advantage when implementing a computer strategy for an organization because it can fee from been tied to a narrow selection of hardware plat forms. Windows NT was designed to support Intel 80486 and Pentium based computers, as well as RISC based computers. It also supports the following processors:-

   IBM power Pc
   DEC Alpha AXP
   MIPS R4 x 00
   Intel 386 and descendants.

2. **MULTITASKING OPERATIONS**: Multitasking means that different types application can run simultaneously. While the user is working on one application, another can be running in the background. Operating system achieves these effects by rapidly switching tasks, by scheduling the microprocessor to work on more than one task at the same time.

3. **MULTITHREADING OPERATIONS**: While running on a Pentium or RISC – based processor, window NT can actually execute multiple pieces of code or threads- from a single application simultaneously. And this capability is called MULTITHREADING. It helps to speed-up applications and allows them to be executive more smoothly. A THREAD is the most basic unit of code that can be scheduled for execution. A process is composed of one or more threads.

4. FILE SYSTEMS: Windows NT supports a variety of file systems including FAT, NTFS and VFAT:

   - File Allocation Table (FAT): The file system used with DOS.
   - New Technology file System (NTFS): The file system introduced by windows NT.
   - Virtual File Allocation Table (VFAT): The file introduced by windows 95.

5. **SECURITY**: Windows NT's security features, such as mandatory logon procedure, memory protection, and auditing and limited network access has been developed so as to prevent unauthorized users in making use of the system.

6. **MULTI PROCESSOR SUPPORT**: Windows NT has the scalability to run on computers with multiple micro processors, there by enabling multi processing applications to run on mere than one processor. This feature is referred to as scalability because the number of processors can be scaled to demand of the task.

7. **STORAGE SPACE**: Windows NT supports a virtually limitless amount of memory and hard disk space. The specific numbers are as follows.
   RAM: Windows NT support 4GB
   HARD DISK SPACE: Windows NT supports 16 exabyte.

8. **COMPATIBILITY WITH APPLICATION**: Windows NT can run the following types of applications.

   DOS 16 bit applications.

Windows 3.x 16 bit (win16) applications New 32bit (win 32) applications.

Windows NT's capability with a variety of applications is critical to its success in the market place.

9. **NET WORKING CONNECTIVITY**:

Windows NT supports the following network protocols:

TCP/IP
DLC
NETBEUI
APPLE TALK
NWLINK (Microsoft 32 bit windows NT IPX/SPX)

3.2 **BENEFITS DERIVED FROM** Windows 98 AND NT.

Benefits of windows 98.

1. For corporate users who don't want to upgrade to NT. Windows 98 will save time and money.

2. For the typical surfer with a midrange PC, windows98 are a Net gain. Windows 98's TCP/IP Improvement will make intranet access faster and more reliable, whether you use IE or navigator.

3. Windows 98 is worth a look, if games are your life. You're sure to be running a high-end machine, so any performance degradation will be minor. And if anyone will make use of win 98'sUSB support, it will be you.

BENEFITS OF WINDOWS NT SERVER

1. Easiest server to set up, Display, Manage and use: System administrators and end users alike will be more productive, faster, with less training time and less support.

2. Most flexible server operating system available: Windows NT server is highly scalable for any size organization. It is compatible with network protocols, existing clients software and has thousand of applications available.

   Only server operating system with intranet, internet and communications services built in: End users can seamlessly access the web as well as communicate via the organizations intranet.

3.3 THE LINK BETWEEN WINDOWS 2000QND OTHER WINDOWS OPERATING SYSTEM.

Windows operating system started with windows 3.1operating system and years after windows 95 operating system came into existence, closely followed was windows 98 operating system therefore windows NT came which has 2 versions: windows NT workstation and windows NT server, the latest windows operating system released by Microsoft Inc. is windows 2000 operating system which have various versions as follows: windows 2000 professional edition, servers edition, advanced server and lastly data center server.

WINDOWS 95 OPERATING SYSTEM

With windows 95 operating system what you have always wanted to do is now possible, like optimizing your computers, connecting to other computers, maintaining your system, exploring your sound and animation. All the things you do now will be easier and faster. Windows 95 operating system offers many new existing features, in addition to improvements to many features you may be familiar with from earlier versions of windows.

WINDOWS 98 OPERATING SYSTEM

Windows 98 operating system has all the important features of windows 95operating system. Some of the new features of windows 98 operating system are as follows:

Hardware support and driver: window 98 includes built- in support for high performance universal serial graphics cards, MMX processors, and DVD drives. It supports the win 32-driver model. This allows developers to create a single hardware driver that will work on both windows NT 5.o, instead of writing different drivers for each operating system.

System maintenance tools: the new help desk links users to local and net help resources including the bug reporting tool and Microsoft knowledge base. Windows 98 also has 15 new troubleshooting utilities to help tasks like setting up your modem.

Better internet support: windows 98 has a more reliable TCP/IP stack than windows 95. a new telephony option in the control panel gives you more dialing control, like support for ten-digital dialing.

Run my old software: windows 98 are not really a new operating system. it is an improved version of windows 95. This means it will run all the software that windows 95 can run., including "legacy" 16 bit software.

WINDOWS NT WORKSTATION 4.0 OPERATING SYSTEM

Windows NT workstation is the most powerful operating system for business computing. These are the major ways in which windows NT workstation 4.0 is designed to meet the demanding computing needs of today's business world.

- Ease of use, productivity and compatibility: Windows NT workstation 4.0 has the windows interface that helps you do your work easier and faster. Windows NT workstation 4.0 ensures high performance for 32-bit programs. All win 16 windows-based programs have the preemptive multitasking capacities of Windows NT workstation 4.0 and can be a separate address space for better responsiveness and reliability.

- System reliability and data protection: windows NT workstation 4.0 meets the reliability standards required by management information systems (MIS) professionals and other power users to run crucial line-of business programs. Windows NT workstation 4.0 protects application programs from one another.

- Work group and networking support: Built in file-sharing and print sharing capabilities make it easy to use windows NT workstation for work group computing. Windows NT workstation 4.0 has an open network system interface that is compatible with Banyan vines, Netware, Novell, unix, Macintosh, and LAN manager 2.x as well as Microsoft for work group, windows 95, and standard x 86 environments.

- Object linking and embedding: in windows NT workstation, you can combine information from several applications into one compound document using the special object linking and embedding (OLE) capabilities of windows – based applications.

- Built-in tools for internetworking: with built-in TCP/IP, Microsoft internet explorer, and Microsoft peer web services, you have all the tools and information needed to browse the internet and publish information to corporate internets.

WINDOWS NT SERVER VERSION 4.0 OPERATING SYSTEM.

This operating System is now a better choice than ever . with the new futures introduced with the windows NT 4.0 option pack, windows NT server is the most complete platform available for building and hosting Web based applications, and the easiest server operating system available. It is so flexible and compatible; Organizations can expect to realize significantly reduced hardware and software costs. And because Windows NT sever 4.0 is so reliable, there is less downtime than ever before.

CHAPTER FOUR

PERFORNACE OF WINDOWS 2000 OPERATING SYSTEM

4.1 PERFORMANCES AND TUNING OF WINDOWS 2000.

The major problem with most networks today is how to optimize its performance for effectiveness. To overcome this, Microsoft has integrated into its network operating systems certain utilities to monitor and optimize its performance. For easy monitoring and effective optimization of system and network performance Microsoft has included additional features into its just released version of windows 2000. Monitoring the performance of windows 2000 systems and the network is an art it takes practice and experience to gain a good grasp of monitoring the trouble shooting. Monitoring and fine tuning the performance of network is one of the most important functions a network administrator (those who can administer the system or network). Therefore, every network administrator should be familiar with these utilities.

The two main monitoring tools that windows 2000 provide are performance and task manager.

1. **PERFORMANCE:** - Performance is a tool that enables one to monitor and diagonise system and network performance problems. Performance is divided into components Viz;

- **System Monitor**
- **Performance logs and alerts**:

System monitor: can be use to collects and view currents statistics on disk, processor, memory and network performance.

Performance logs and alerts: are used to record network and computer performance and to notify one if statistics exceeds or fails to meet the threshold that one has defined. With performance, one can also monitor remote system, and determine statistics that one can use tune his system and perform capacity planning.

To optimize the performance of windows 2000 server it requires that you first analyze how your network is currently performing. One can now make changes to its configuration to increase performance. To analyze your windows 2000 server's current level of performance, you should monitor the following four keys server components.

4.2 MONITORING OF THE PERFORMANCE OF WINDOWS 2000.

The four basic keys to monitor in windows 2000 are as follows:

1. Processor
2. Memory
3. Hard disk subsystem
4. Network system (network card and cables)

All four of these components have an impact on the performance of your windows 2000 server.

To monitor and optimize network performance, you will need to use the event viewer to analyze system events. Components services and application will write events to the event viewer to keep one informed about their functions. The event viewer is an administrative tool that enables one to track and monitor significant events that occur on a system. These events are divided into different categories: application, directory services, file replication services, security and system. The directory are added feature included in the windows 2000 version, that are absent in earlier version of the operating system. Each of this category is recorded in a separate log (files where each of this event are saved) for viewing with the event viewer.

In addition to being logged, many events will display an on-screen massage to the user.

The following log are contained in the event viewer:

The application log records events generated by applications, including some windows 2000 system applications, such as the extensible engine (ESE) the data base format of the active directory.

The directory service log records diagnostic and error information from the active directory and is available only on the domain controller.

4.3 THE ARCHITECTURE OF WINDOWS 2000 OPERATING SYSTEM.

The first version of windows 2000 professional is based on a 32-bit architecture. This means that the operating system can handle 32-boits of data simultaneously. A 32-bit architecture for an operating system is nothing new. Windows NT 4.0 and windows 98 are both 32-bit operating system. Microsoft intends to build windows 2000 to be 64-bits ready, as well. When 64-bit application become available, 32-bit windows 2000 will be able to support them. Rather than merely double the capabilities of this operating system, a jump from 32-bits to 64-bits architectures should increase performance exponentially.

32-bit windows 2000 will support four Gibabit of virtual memory. The 64 windows 2000, on the other hand, will support 16 tetra bytes (TB) of virtual memory. Similarly, the 32-bit windows 2000 support 1 Gibabit of system cache, while the 64-bit windows 2000 will support 1 TB. The result of more from a 32-bit to 62-bit architecture will be a noticeable improvement in system performance.

4.4 WINDOWS 2000 SECURITY

The new windows 2000 demonstrate an applauded level of security in networking implementation is an attempt to establish superiority over the previous versions and complete keenly with the security offers by other operating system. Windows 2000 is bundled with essential components to build a secured transmission along network lines thereby making the networking hawk proof. To achieve this goal, Microsoft integrated the Microsoft certificate services offer public key cryptography guaranteeing the identity of both your

server and your users through the use of certificate. While the IP see enable you to limit your line communication between specific computers in your network.

PUBLIC KEY CRYTOGRAPHY

The most secured form of data transmission identifies the users involved in the communication and would encrypt all the data sent. Encryption is a means of coding data transmission so that unauthorized individual cannot interpret them. A third party is often provided encryption. It often comes as separate software that resides between your application software and the network communication software layers.

Public key cryptography technique provides both authentication and encryption. It also relies on a pair of private and public keys of function. Only the other key can decrypt data encrypted with one key. This key pairs involves digital signatures, digital envelopes and digital certificates.

DIGITAL SIGNATURES

Digital signatures provide a means of guaranteeing that the sender of a message is actually the author of that massage. Without digital signature you can be sure the message could be forged or intercepted. To guarantee authenticity, the author of the message uses his or her private key to generate a string of characters (coded) called the digital signature.

Because only author's public key can decrypt the digital signature, successful decryption proves that the sender is the author of the message.

DIGITAL ENVELOPS

Digital envelopes provide guaranteed identification of the parties to a communication session, message encryption, and private communication between two parties. When a user wants to communicate securely with another party, the user first obtains the recipient's public key.

Then the data to be transmitted is encrypted using the recipient's public key; this creates the digital envelope surrounding the message. The recipient uses his or her private key to decrypt the message; the public key cannot be used to decrypt messages. The key pair combination ensures that only the sender and receiver can know the contents of the data transmitted.

DIGITAL CERTIFICATES

A digital certificate identifies a user or entity, such as a corporation or server. Certificates contain identifying information about the entity, such as a name, location, organization, so forth and a copy of the public key.

Certificates are issued by a certificate authority (CA) that is trusted by all parties. Many companies and organizations act as certification authorities. These companies follow strict guidelines to identify and verify people or organizations that apply for certificates. Then, after these criteria have been met, certification authorities grant a unique digital certificate to the applicant.

Additionally, certification authorities record your digital certificate and identifying information so that they can later answer requirements from other to match your identity with your certificate.

If you want to enable users to verify the authenticity of your server, you need to get a server certificate. You will want to get a certificate from a widely known and trusted CA; IBM, Thatwte Corporation and version all act as certification authorities. You can also install Microsoft's certificate to enable your windows 2000 server to act as a CA for network.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 LIMITATION

The problems I encountered during my research work, was that I found it difficult to source relevant materials, thereby causing me a lot of financial constraints.

5.2 CONCLUSION

The characteristics features of windows 2000 operating system cannot by any means be exhausted given the life span and scopes of this project work. Windows 2000 professional meets customer needs in this following reason

1. ADD VALUE:

It allows users to be more productive in a variety of scenarios; mobile, work-from-home, global and web.

Ensure highest level of security for user data. Deliver the functionality necessary for a new generations of application.

2. REDUCE OVERALL COSTS:

- Deliver standardize desktops quickly.
- Reduce the number of "touches" to the desktop.
- Decrease the number of crashes and re-boots

Windows 2000 however in conclusion rendered the following advantages:

- Easiest windows yet: What it means is that windows 2000 professional makes it simple to work, browse web, and configure your system. The user interface is mere intuitive and intelligent.
- Best of windows 98: Windows 2000 professional improves the next generation hardware support introduced in widows 98 and provides greater capability of plug and play.

Power of windows NT: Windows 2000 professional builds on the traditional

strengths of windows NT workstation, providing security, reliability, performance and manageability.

Lowest cost of ownership: Windows 2000 professional saves the organization money because it is easier to deploy and manage.

5.1 RECOMMENDATION

Going by the scope of this project, I hereby recommended that further research work be carried to detect the principal flows that led to incompatibility issue in the use of windows 2000 operating system.

Also I want to recommend that consumer of operating system should use windows 2000 operating system because of scalability, reliability and availability.

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